

Appl. No. 10/028,245  
Amdt. dated March 21, 2005  
Reply to Office action of October 19, 2004

Page 8

## **REMARKS**

### **The Invention.**

The present invention provides a novel endoglucanase nucleic acid sequence, designated *eg/8*, and the corresponding EGVIII amino acid sequence. The invention also provides expression vectors and host cells comprising a nucleic acid sequence encoding EGVIII, recombinant EGVIII proteins and methods for producing the same.

### **Status of the Application.**

Claims 2, 4-7, 19-20, 22-24 and 26 are pending in the application. Applicants gratefully acknowledge that Claims 23 and 24 are deemed allowable. Applicants reserved the right to file further continuation applications on any subject matter disclosed in the instant application or on the subject matter of any previously or presently cancelled claim. Claims 1, 6, 8, 22 and 26 have been amended to more clearly and distinctly claim the invention. Applicants assert new matter has not been introduced by the amendment.

### **Specification.**

The disclosure was objected to as containing an embedded hyperlink and/or other form of browser-executable code. Applicants have amended the specification to remove the hyperlinks as suggested by the Examiner. Withdrawal of the objection is respectfully requested.

### **Sequence Compliance.**

The Examiner has objected to the introduction of a new SEQ ID NO. and requested its cancellation. Applicants have complied and have rewritten Claim 1 based on the existing sequences.

### **35 U.S.C. §112, first paragraph.**

#### **Claims 2 and 5, 10 12-17 and 19-20**

Claims 2 and Claims 5, 10 12-17 and 19-20 stand rejected under 35 USC §112, first paragraph as failing to be described in the specification. Specifically, the Examiner asserts that the use of SEQ ID NO:5 constituted "new matter". Applicants have amended Claim 2 to remove reference to SEQ ID NO:5. Withdrawal of the rejection is respectfully requested.

Appl. No. 10/028,245  
Amndt. dated March 21, 2005  
Reply to Office action of October 19, 2004

Page 9

Claims 2, 5, 8-17, 19-20, 22 and 26

Claims 2, 5, 8-17, 19-20, 22 and 26 stand rejected under 35 USC §112, first paragraph as allegedly containing subject which was not described in the specification in such a way as to convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant respectfully traverses.

It is well settled that "[t]he first paragraph of section 112 requires nothing more than objective enablement. How such a teaching is set forth, either by the use of illustrative examples or by broad terminology, is of no importance." *In re Marzocchi*, 169 USPQ 367, 369 (CCPA 1971). Moreover, "a specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first paragraph of section 112 unless there is reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support." *In re Marzocchi*, 169 USPQ at 369.

Despite the disclosure of utility in the specification, the Examiner rejected the claims. The reasoning provided in the Office Action was that the genus of DNA molecules encoding the fungal EG VIII is "a large variable genus with the potentiality of having many different structures." Applicants respectfully submit that this reasoning is not sufficient to render the claims nonenabled. Applicants respectfully submit that the single species disclosed in the present application is more than sufficient to inform those of skill in the enzyme art that Applicant was in possession of the claimed invention.

The claimed polynucleotides are structurally similar because they hybridize under specified stringency conditions with the nucleic acid sequence of SEQ ID NO: 4 and/or encode an amino acid sequence that is at least 95% identical with the amino acid sequence of SEQ ID NO: 2 or at least 90% identical with the amino acid sequence presented in Figure 2 and the encoded amino acid sequence has endoglucanase activity. One of ordinary skill in the art therefore would expect that the claimed would not be as variable as the Examiner asserts.

Appl. No. 10/028,245  
Amdt. dated March 21, 2005  
Reply to Office action of October 19, 2004

Page 10

Moreover, companies which develop enzymes are able to produce and screen thousands of enzymes (and the polynucleotides that encode them) in a short period of time. Indeed, enzyme companies have developed automated robotic systems for producing and screening enzymes.

Furthermore, a person skilled in the art can, as a matter of routine, sequence and determine homology of any protein with the EG VIII described by Applicants. In addition, Applicants have provided assays at page 31, line 31 *et seq.* to determine enzymatic activity that are also routine in the art.

The Examiner asserts that Applicants have not taught "a universal method that can be used to inactivate any fungal polynucleotide" (see page 7 of the Office Action) and that the specification does not establish "a single universal method" for isolating polynucleotides or inactivating polynucleotides (see pages 9 and 11 of the Office Action). Applicants respectfully note that this is not required for patentability and Applicants must respectfully disagree with the Examiner's argument and rationale, as the present Specification teaches how to produce variations in the nucleotide sequence (See *e.g.*, page 21 of the Specification), as well as how to determine whether the mutated *egl8* falls within the Claims (See *e.g.*, page 31 of the Specification as well as knowledge in the art), and methods for detecting homologues of *egl8* (See *e.g.*, pages 9 and 36 - 38 of the Specification), and methods for determining endoglucanase activity (See *e.g.*, pages 31 of the Specification). Applicants respectfully submit that both the structure and function of the endoglucanase encoding polynucleotides claimed are provided in the Specification, as the amino acid sequence (base structure), its glycosyl family classification (See page 18 of the Specification) and function (endoglucanase activity) are well-described throughout the Specification.

The Examiner has stated the Mosimann *et al.* reference submitted previously by the Applicants fails to sufficiently address the issue of unpredictability in the art because it does not explicitly discuss endoglucanase. The Examiner has not provided any reason why a general principle would not be applicable to a specific protein, *i.e.*, an endoglucanase. Applicants fail to understand how a paper directed to proteins generally fails to be applicable to endoglucanases specifically. The reference addresses

Appl. No. 10/028,245  
Amdt. dated March 21, 2005  
Reply to Office action of October 19, 2004

Page 11

numerous proteins (*i.e.*, seven different proteins) of *undisclosed tertiary structure*. In the instant case, the Applicants have provided not only the primary sequence but also the glycosy hydrolase family classification of the endoglucanase. One skilled in the art would recognize that the family classification provides information on the folding characteristics and mechanism of action of these enzymes of the protein (*i.e.*, enzyme). Thus, one skilled in the art would be starting with more information than what was provided in the Mosimann study and would therefore be able to predict at least to the same degree of confidence for an endoglucanase as for the other proteins studied.

The fact that Applicants do not explicitly provide examples regarding every polynucleotide encoding an endoglucanase encompassed by the present claims does not render the present claims unpatentable. Contrary to the Examiner's arguments, Applicants are NOT required to describe in detail each and every embodiment of the presently claimed invention. Indeed, description of a representative number of species does not require that the Applicant describe each and every species. As indicated in MPEP §2163(II)(A)(3)(a)(ii), "[s]atisfactory disclosure of a 'representative number' depends on whether one of skill in the art would recognize that the applicant was in possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed. For inventions in an unpredictable art, adequate written description of a genus which embraces widely variant species cannot be achieved by disclosing only one species within the genus. See, e.g., *Eli Lilly*. Description of a representative number of species does not require the description to be of such specificity that it would provide individual support for each species that the genus embraces."

In the instant case, the claims are drawn to a specific endoglucanase. The specification need not teach one skilled in the art how to determine whether each embodiment within the scope of the claims is operable. Rather, the specification must teach how to make/or use each embodiment within the scope of the claims without undue experimentation. And, since the specification teaches how to make an endoglucanase (and one skilled in the art using the specification as well as the art available at the filing date of the application could determine, case by case, whether

Appl. No. 10/028,245  
Amdt. dated March 21, 2005  
Reply to Office action of October 19, 2004

Page 12

each additional embodiment, each additional endoglucanase, could be made and was operable), and that it was well known prior to the filing of the instant application that molecular modeling could help predict which alterations in the protein would be tolerated, the specification is sufficient under 35 USC 112, first paragraph for each and every embodiment of the claimed invention. For the foregoing reasons, Applicants submit that the claims overcome this rejection. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 22 and 26

Claims 22 and 26 stand rejected under 35 USC §112, first paragraph as allegedly containing subject which was not described in the specification in such a way as to convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, the Examiner asserts that the specification does not contain any disclosure of the structure of all DNA sequences that are encompassed by the claims. Applicant respectfully traverses.

Although Applicants respectfully disagree with the Examiner, in order to further the prosecution of the present application and Applicant's business interests, yet without acquiescing to the Examiner's arguments, Applicants have amended Claims 22 and 26 to recite that the polynucleotide is according to Claim 2.

For the foregoing reasons, Applicants submit that the claims overcome this rejection. Applicants respectfully request reconsideration and withdrawal of the rejection.

35 U.S.C. §112, second paragraph.

Claims 6-9 and 11 are rejected under 35 USC §112, second paragraph as failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6-7

The Examiner points out that Claim 6 continues to depend from Claim 1 which has been cancelled rendering the claim indefinite. Applicants have amended Claim 6 to correct its dependency. Withdrawal of this rejection is respectfully requested.

Appl. No. 10/028,245  
Amdt. dated March 21, 2005  
Reply to Office action of October 19, 2004

Page 13

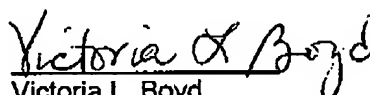
Claims 8, 9 and 11

Here the Examiner asserts that the phrase "intermediate to high stringency" is not clear and that the phrase "high stringency" should be used. Although Applicants respectfully disagree with the Examiner, in order to further the prosecution of the present application and Applicant's business interests, yet without acquiescing to the Examiner's arguments, Applicants have amended Claim 8 to recite "high stringency". Withdrawal of the rejection is respectfully requested.

CONCLUSION

In light of the above amendments, as well as the remarks, the Applicants believe the pending claims are in condition for allowance and issuance of a formal Notice of Allowance at an early date is respectfully requested. If a telephone conference would expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (650) 846-7615.

Respectfully submitted,  
GENENCOR INTL., INC.

  
Victoria L. Boyd  
Registration No. 43,510

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Genencor International, Inc.  
925 Page Mill Road  
Palo Alto, CA 94304  
Tel: 650-846-7615  
Fax: 650-845-6504